

SEQUENCE LISTING

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Guo, Lining
Rice, John

<120> METHODS FOR IDENTIFYING INHIBITORS OF STEROL 14-alpha-DEMETHYLASE

<130> 2187US

<160> 15

<170> PatentIn version 3.2

<210> 1

<211> 488

<212> PRT

<213> Arabidopsis thaliana

<400> 1

Met	Glu	Leu	Asp	Ser	Glu	Asn	Lys	Leu	Leu	Lys	Thr	Gly	Leu	Val	Ile
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Val	Ala	Thr	Leu	Val	Ile	Ala	Lys	Leu	Ile	Phe	Ser	Phe	Phe	Thr	Ser
			20					25					30		

Asp	Ser	Lys	Lys	Lys	Arg	Leu	Pro	Pro	Thr	Leu	Lys	Ala	Trp	Pro	Pro
		35					40					45			

Leu	Val	Gly	Ser	Leu	Ile	Lys	Phe	Leu	Lys	Gly	Pro	Ile	Ile	Met	Leu
	50					55					60				

Arg	Glu	Glu	Tyr	Pro	Lys	Leu	Gly	Ser	Val	Phe	Thr	Val	Asn	Leu	Val
65					70					75				80	

His	Lys	Lys	Ile	Thr	Phe	Leu	Ile	Gly	Pro	Glu	Val	Ser	Ala	His	Phe
				85					90					95	

Phe	Lys	Ala	Ser	Glu	Ser	Asp	Leu	Ser	Gln	Gln	Glu	Val	Tyr	Gln	Phe
			100					105						110	

Asn	Val	Pro	Thr	Phe	Gly	Pro	Gly	Val	Val	Phe	Asp	Val	Asp	Tyr	Ser
		115					120					125			

Val	Arg	Gln	Glu	Gln	Phe	Arg	Phe	Phe	Thr	Glu	Ala	Leu	Arg	Val	Asn
	130					135					140				

Lys Leu Lys Gly Tyr Val Asp Met Met Val Thr Glu Ala Glu Asp Tyr
 145 150 155 160

Phe Ser Lys Trp Gly Glu Ser Gly Glu Val Asp Ile Lys Val Glu Leu
 165 170 175

Glu Arg Leu Ile Ile Leu Thr Ala Ser Arg Cys Leu Leu Gly Arg Glu
 180 185 190

Val Arg Asp Gln Leu Phe Asp Asp Val Ser Ala Leu Phe His Asp Leu
 195 200 205

Asp Asn Gly Met Leu Pro Ile Ser Val Leu Phe Pro Tyr Leu Pro Ile
 210 215 220

Pro Ala His Arg Arg Arg Asp Arg Ala Arg Glu Lys Leu Ser Glu Ile
 225 230 235 240

Phe Ala Lys Ile Ile Gly Ser Arg Lys Arg Ser Gly Lys Thr Glu Asn
 245 250 255

Asp Met Leu Gln Cys Phe Ile Glu Ser Lys Tyr Lys Asp Gly Arg Gln
 260 265 270

Thr Thr Glu Ser Glu Val Thr Gly Leu Leu Ile Ala Ala Leu Phe Ala
 275 280 285

Gly Gln His Thr Ser Ser Ile Thr Ser Thr Trp Thr Gly Ala Tyr Leu
 290 295 300

Met Arg Tyr Lys Glu Tyr Phe Ser Ala Ala Leu Asp Glu Gln Lys Asn
 305 310 315 320

Leu Ile Ala Lys His Gly Asp Lys Ile Asp His Asp Ile Leu Ser Glu
 325 330 335

Met Asp Val Leu Tyr Arg Cys Ile Lys Glu Ala Leu Arg Leu His Pro
 340 345 350

Pro Leu Ile Met Leu Met Arg Ala Ser His Ser Asp Phe Ser Val Thr
 355 360 365

Ala Arg Asp Gly Lys Thr Tyr Asp Ile Pro Lys Gly His Ile Val Ala

370

375

380

Thr Ser Pro Ala Phe Ala Asn Arg Leu Pro His Ile Phe Lys Asp Pro
 385 390 395 400

Asp Thr Tyr Asp Pro Glu Arg Phe Ser Pro Gly Arg Glu Glu Asp Lys
 405 410 415

Ala Ala Gly Ala Phe Ser Tyr Ile Ala Phe Gly Gly Gly Arg His Gly
 420 425 430

Cys Leu Gly Glu Pro Phe Ala Tyr Leu Gln Ile Lys Ala Ile Trp Ser
 435 440 445

His Leu Leu Arg Asn Phe Glu Leu Glu Leu Val Ser Pro Phe Pro Glu
 450 455 460

Ile Asp Trp Asn Ala Met Val Val Gly Val Lys Gly Asn Val Met Val
 465 470 475 480

Arg Tyr Lys Arg Arg Gln Leu Ser
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<210> 2
 <211> 507
 <212> PRT
 <213> Oryza sativa

<400> 2

Met Asp His Val Thr Ser Ser Thr Ile Ala Arg Gly Ala Met Ser Trp
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Val Ala Ala Thr Val Ala Leu Leu Leu Thr Thr Ala Val Ile Leu Thr
 20 25 30

Ala Leu Gln Lys Arg Lys Ile Ser Ser Pro Ala Ala Ala Ala Pro Pro
 35 40 45

Val Val Arg Gly Ala Gly Leu Val Arg Phe Ala Arg Ala Met Ala Arg
 50 55 60

Asp Gly Pro Leu Glu Ala Ile Arg Glu Gln Gln Ala Lys Leu Gly Ser
 65 70 75 80

Val Phe Thr Ala Ile Ala Pro Phe Gly Leu Phe Lys Val Thr Phe Leu
 85 90 95

Ile Gly Pro Glu Val Ser Ser His Phe Tyr Leu Ala Pro Glu Ser Glu
 100 105 110

Met Gly Gln Gly Ser Ile Tyr Arg Phe Thr Val Pro Leu Phe Gly Pro
 115 120 125

Glu Val Gly Tyr Ala Val Asp Pro Asp Thr Arg Ala Glu Gln Met Arg
 130 135 140

Leu Phe Trp Asp Val Leu Lys Pro Arg Ser Ile Glu Ala Arg Val Gly
 145 150 155 160

Ala Met Ala Glu Glu Val Gln Asn Tyr Phe Ser Arg Trp Gly Glu Gln
 165 170 175

Gly Thr Val Asp Leu Lys Lys Glu Leu Glu Gln Val Leu Met Leu Ile
 180 185 190

Ala Ser Arg Cys Leu Leu Gly Arg Glu Val Arg Glu Ser Met Val Asp
 195 200 205

Glu Val Tyr Glu Leu Phe Arg Asp Leu Asp Asn Gly Leu His Leu Ile
 210 215 220

Ser Thr Met Leu Pro Tyr Leu Pro Thr Pro Ala His Arg Arg Arg Asp
 225 230 235 240

Arg Ala Arg Gln Arg Leu Gly Glu Ile Phe Thr Glu Val Ile Arg Ser
 245 250 255

Arg Arg Asn Ser Gly Thr Ala Asp Asn Gly Asp Asp Val Leu Gln Arg
 260 265 270

Leu Ile Asp Gly Arg Tyr Lys Asp Glu Arg Asp Leu Thr Asp Val Glu
 275 280 285

Val Val Gly Leu Leu Val Ala Leu Val Phe Ala Gly Lys His Ser Ser
 290 295 300

Ser Ser Val Ser Thr Trp Thr Gly Ile Asn Leu Leu Ser His Pro Asn
 305 310 315 320

His Leu Val Ala Val Ile Ala Glu Gln Asp Arg Leu Met Ala Ser Arg
 325 330 335

Ala Arg Thr Asp Asp Asp His Asp Arg Val Asn Tyr Asp Thr Val Gln
 340 345 350

Glu Met Thr Thr Leu His Arg Cys Ile Lys Glu Ala Leu Arg Leu His
 355 360 365

Pro Pro Ala Val Ala Met Phe Arg Gln Ala Arg Lys His Phe Thr Val
 370 375 380

Gln Thr Lys Glu Gly Lys Glu Tyr Thr Ile Pro Gly Gly His Thr Val
 385 390 395 400

Met Ser Thr Ile Leu Val Asn His His Met Pro Asn Val Tyr Lys Asp
 405 410 415

Pro His Val Phe Asp Pro Ser Arg Phe Ala Arg Gly Arg Gly Glu Asp
 420 425 430

Lys Ala Ala Gly Pro Phe Ser Phe Leu Ala Phe Gly Ala Gly Arg His
 435 440 445

Ser Cys Ala Gly Glu Ser Phe Ala Tyr Thr Gln Ile Lys Val Ile Trp
 450 455 460

Ser His Leu Leu Arg Asn Phe Glu Leu Lys Met Val Ser Pro Phe Pro
 465 470 475 480

Glu Thr Ser Trp Arg Met Val Thr Pro Glu Pro Lys Gly Thr Val Met
 485 490 495

Ile Ser Tyr Arg Arg Arg Asn Leu Thr Cys Lys
 500 505

<210> 3
 <211> 487
 <212> PRT
 <213> Nicotiana tabacum

<400> 3

Met Glu Leu Gly Asp Tyr Lys Ile Leu Asn Val Gly Leu Leu Leu Val
1 5 10 15

Val Thr Leu Val Val Ala Lys Leu Ile Ser Ala Leu Ile Met Pro Arg
20 25 30

Ser Lys Lys Arg Leu Pro Pro Val Ile Lys Ser Trp Pro Ile Leu Gly
35 40 45

Gly Leu Leu Arg Phe Leu Lys Gly Pro Val Val Met Leu Arg Glu Glu
50 55 60

Tyr Pro Lys Leu Gly Ser Val Phe Thr Leu Asn Leu Leu Asn Lys Asn
65 70 75 80

Ile Thr Phe Phe Ile Gly Pro Glu Val Ser Ala His Phe Phe Lys Ala
85 90 95

Pro Glu Thr Asp Leu Ser Gln Gln Glu Val Tyr Gln Phe Asn Val Pro
100 105 110

Thr Phe Gly Pro Gly Val Val Phe Asp Val Asp Tyr Thr Ile Arg Gln
115 120 125

Glu Gln Phe Arg Phe Phe Thr Glu Ala Leu Arg Val Asn Lys Leu Lys
130 135 140

Gly Tyr Val Asp His Met Val Met Glu Ala Glu Glu Tyr Phe Ser Lys
145 150 155 160

Trp Gly Asp Ser Gly Glu Met Asp Leu Lys Tyr Glu Leu Glu His Leu
165 170 175

Ile Ile Leu Thr Ala Ser Arg Cys Leu Leu Gly Glu Glu Val Arg Asn
180 185 190

Lys Leu Phe Glu Asp Val Ser Ala Leu Phe His Asp Leu Asp Asn Gly
195 200 205

Met Leu Pro Ile Ser Val Ile Phe Pro Tyr Leu Pro Ile Pro Ala His
210 215 220

Arg Arg Arg Asp Asn Ala Arg Lys Lys Leu Ala Glu Ile Phe Ala Asn
 225 230 235 240

Ile Ile Asp Ser Arg Lys Arg Thr Gly Lys Ala Glu Ser Asp Met Leu
 245 250 255

Gln Cys Phe Ile Asp Ser Lys Tyr Lys Asp Gly Arg Ala Thr Thr Asp
 260 265 270

Ser Glu Ile Thr Gly Leu Leu Ile Ala Ala Leu Phe Ala Gly Gln His
 275 280 285

Thr Ser Ser Ile Thr Ser Thr Trp Thr Gly Ala Tyr Leu Leu Cys Asn
 290 295 300

Asn Lys Tyr Met Ser Ala Val Val Asp Glu Gln Lys Asn Leu Met Lys
 305 310 315 320

Lys His Gly Asn Lys Val Asp His Asp Ile Leu Ser Glu Met Glu Val
 325 330 335

Leu Tyr Arg Cys Ile Lys Glu Val Leu Arg Leu His Pro Pro Leu Ile
 340 345 350

Met Leu Leu Arg Ser Ser His Ser Asp Phe Thr Val Lys Thr Arg Glu
 355 360 365

Gly Lys Glu Tyr Asp Ile Pro Lys Gly His Ile Val Ala Thr Ser Pro
 370 375 380

Ala Phe Ala Asn Arg Leu Pro His Val Tyr Lys Asn Pro Asp Thr Tyr
 385 390 395 400

Asp Pro Asp Arg Phe Thr Pro Gly Arg Asp Glu Asp Lys Val Ala Gly
 405 410 415

Ala Phe Ser Tyr Ile Ser Phe Gly Gly Gly Arg His Gly Cys Leu Gly
 420 425 430

Glu Pro Phe Ala Tyr Leu Gln Ile Lys Ala Ile Trp Ser His Leu Leu
 435 440 445

Arg Asn Phe Glu Phe Glu Leu Ile Ser Pro Phe Pro Glu Ile Asp Trp
 450 455 460

Asn Ala Met Val Val Gly Val Lys Gly Lys Val Met Val Lys Tyr Lys
 465 470 475 480

Arg Arg Lys Leu Ser Asn Glu
 485

<210> 4
 <211> 453
 <212> PRT
 <213> Triticum aestivum

<400> 4

Arg Pro Pro Pro Thr Ile Pro Gly Ala Pro Val Val Gly Gly Leu Leu
 1 5 10 15

Arg Phe Leu Arg Gly Pro Ile Pro Leu Ile Arg Ala Glu Tyr Ala Arg
 20 25 30

Leu Gly Pro Val Phe Thr Val Pro Ile Leu Thr Arg Arg Ile Thr Phe
 35 40 45

Leu Ile Gly Pro Asp Val Ser Ala His Phe Phe Lys Ser Asn Glu Ser
 50 55 60

Asp Met Ser Gln Gln Glu Val Tyr Arg Phe Asn Val Pro Thr Phe Gly
 65 70 75 80

Pro Gly Val Val Phe Asp Val Asp Tyr Gln Val Arg Gln Glu Gln Phe
 85 90 95

Arg Phe Phe Thr Glu Ala Leu Arg Ala Asn Lys Leu Arg Ser Tyr Val
 100 105 110

Asp Gln Met Val Ala Glu Ala Glu Glu Tyr Phe Ser Lys Trp Gly Glu
 115 120 125

Ser Gly Thr Val Asp Leu Lys Tyr Glu Leu Glu His Leu Ile Ile Leu
 130 135 140

Thr Ala Ser Arg Cys Leu Leu Gly Arg Glu Val Arg Glu Lys Leu Phe
 145 150 155 160

Asp Asp Val Ser Ala Leu Phe His Asp Leu Asp Asn Gly Met Leu Pro
 165 170 175

Ile Ser Val Ile Phe Pro Tyr Leu Pro Ile Pro Ala His Arg Arg Arg
 180 185 190

Asp Gln Ala Arg Thr Arg Leu Ala Glu Ile Phe Ala Thr Ile Ile Lys
 195 200 205

Ser Arg Lys Ala Ser Gly Gln Ser Glu Glu Asp Met Leu Gln Cys Phe
 210 215 220

Ile Asp Ser Lys Tyr Lys Asn Gly Arg Gln Thr Thr Glu Ser Glu Val
 225 230 235 240

Thr Gly Leu Leu Ile Ala Ala Leu Phe Ala Gly Gln His Thr Ser Ser
 245 250 255

Ile Thr Ser Thr Trp Thr Gly Ala Tyr Leu Leu Lys Phe Gln Gln Tyr
 260 265 270

Phe Ala Glu Ala Val Glu Glu Gln Lys Glu Val Met Lys Arg His Gly
 275 280 285

Asp Lys Ile Asp His Asp Ile Leu Ala Glu Met Asp Val Leu Tyr Arg
 290 295 300

Cys Ile Lys Glu Ala Leu Arg Leu His Pro Pro Leu Ile Met Leu Leu
 305 310 315 320

Arg Gln Ser His Ser Asp Phe Ser Val Thr Thr Arg Glu Gly Lys Glu
 325 330 335

Phe Asp Ile Pro Lys Gly His Ile Val Ala Thr Ser Pro Ala Phe Ala
 340 345 350

Asn Arg Leu Pro His Ile Phe Lys Asn Pro Asp Ser Tyr Asp Pro Asp
 355 360 365

Arg Phe Ala Ala Gly Arg Glu Glu Asp Lys Val Ala Gly Ala Phe Ser
 370 375 380

Tyr Ile Ser Phe Gly Gly Gly Arg His Gly Cys Leu Gly Glu Pro Phe
 385 390 395 400

Ala Tyr Leu Gln Ile Lys Ala Ile Trp Thr His Leu Leu Arg Asn Phe
 405 410 415

Glu Phe Glu Leu Val Ser Pro Phe Pro Glu Asn Asp Trp Asn Ala Met
 420 425 430

Val Val Gly Ile Lys Gly Glu Val Met Val Asn Tyr Lys Arg Arg Lys
 435 440 445

Leu Ile Val Asp Asn
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<210> 5
 <211> 492
 <212> PRT
 <213> Sorghum bicolor

<400> 5

Met Asp Leu Ala Asp Ile Pro Gln Gln Gln Arg Leu Met Ala Gly Leu
 1 5 10 15

Ala Leu Val Val Ala Thr Val Ile Phe Leu Lys Leu Leu Leu Ser Phe
 20 25 30

Arg Ser Gly Gly Gly Lys Lys Arg Leu Pro Pro Thr Ile Pro Gly Ala
 35 40 45

Pro Val Val Gly Gly Leu Val Lys Phe Met Arg Gly Pro Ile Pro Met
 50 55 60

Ile Arg Glu Gln Tyr Ala Ala Leu Gly Ser Val Phe Thr Val Pro Ile
 65 70 75 80

Ile Thr Arg Arg Ile Thr Phe Leu Ile Gly Pro Glu Val Ser Ala His
 85 90 95

Phe Phe Lys Gly Asn Glu Ala Glu Met Ser Gln Gln Glu Val Tyr Arg
 100 105 110

Phe Asn Val Pro Thr Phe Gly Pro Gly Val Val Phe Asp Val Asp Tyr

115	120	125
Ser Val Arg Gln Glu Gln Phe Arg Phe Phe Thr Glu Ala Leu Arg Ala		
130	135	140
Asn Lys Leu Arg Ser Tyr Val Asp Gln Met Val Ala Glu Ala Glu Glu		
145	150	155
Tyr Phe Ser Lys Trp Gly Glu Ser Gly Thr Val Asp Leu Lys Tyr Glu		
	165	170
Leu Glu His Leu Ile Ile Leu Thr Ala Ser Arg Cys Leu Leu Gly Arg		
	180	185
Glu Val Arg Glu Lys Leu Phe Asp Asp Val Ser Ala Leu Phe His Asp		
	195	200
Leu Asp Asn Gly Ile Gln Pro Ile Ser Val Leu Phe Pro Tyr Leu Pro		
	210	215
Ile Pro Ala His Lys Arg Arg Asp Lys Ala Arg Ala Arg Leu Ala Glu		
225	230	235
Ile Phe Ala Thr Ile Ile Lys Ser Arg Lys Ala Ser Gly Gln Ser Glu		
	245	250
Glu Asp Met Leu Gln Cys Phe Ile Asp Ser Lys Tyr Lys Asn Gly Arg		
	260	265
Pro Thr Thr Glu Gly Glu Val Thr Gly Leu Leu Ile Ala Ala Leu Phe		
	275	280
Ala Gly Gln His Thr Ser Ser Ile Thr Ser Thr Trp Thr Gly Ala Tyr		
	290	300
Met Leu Arg Phe Lys Gln Tyr Phe Ala Glu Ala Val Glu Glu Gln Lys		
305	310	315
Asp Val Met Lys Arg His Gly Asp Lys Ile Asp His Asp Ile Leu Ala		
	325	330
Glu Met Asp Val Leu Tyr Arg Cys Ile Lys Glu Ala Leu Arg Leu His		
	340	345
		350

Pro Pro Leu Ile Met Leu Leu Arg Gln Ser His Ser Asp Phe Thr Val
 355 360 365

Thr Thr Lys Glu Gly Lys Glu Tyr Asp Ile Pro Lys Gly His Ile Val
 370 375 380

Ala Thr Ser Pro Ser Phe Ala Asn Arg Leu Pro His Ile Tyr Lys Asn
 385 390 395 400

Pro Asp Ser Tyr Asp Pro Asp Arg Phe Gly Pro Gly Arg Glu Glu Asp
 405 410 415

Lys Ala Ala Gly Ala Phe Ser Tyr Ile Ser Phe Gly Gly Gly Arg His
 420 425 430

Gly Cys Leu Gly Glu Pro Phe Ala Tyr Leu Gln Ile Lys Ala Ile Trp
 435 440 445

Thr His Leu Leu Arg Asn Phe Glu Phe Glu Leu Val Ser Pro Phe Pro
 450 455 460

Glu Asn Asp Trp Asn Ala Met Val Val Gly Ile Lys Gly Glu Val Met
 465 470 475 480

Val Asn Tyr Lys Arg Arg Lys Leu Val Val Asp Asn
 485 490

<210> 6
 <211> 530
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 6

Met Ser Ala Thr Lys Ser Ile Val Gly Glu Ala Leu Glu Tyr Val Asn
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Ile Gly Leu Ser His Phe Leu Ala Leu Pro Leu Ala Gln Arg Ile Ser
 20 25 30

Leu Ile Ile Ile Ile Pro Phe Ile Tyr Asn Ile Val Trp Gln Leu Leu
 35 40 45

Tyr Ser Leu Arg Lys Asp Arg Pro Pro Leu Val Phe Tyr Trp Ile Pro
 50 55 60

Trp Val Gly Ser Ala Val Val Tyr Gly Met Lys Pro Tyr Glu Phe Phe
 65 70 75 80

Glu Glu Cys Gln Lys Lys Tyr Gly Asp Ile Phe Ser Phe Val Leu Leu
 85 90 95

Gly Arg Val Met Thr Val Tyr Leu Gly Pro Lys Gly His Glu Phe Val
 100 105 110

Phe Asn Ala Lys Leu Ala Asp Val Ser Ala Glu Ala Ala Tyr Ala His
 115 120 125

Leu Thr Thr Pro Val Phe Gly Lys Gly Val Ile Tyr Asp Cys Pro Asn
 130 135 140

Ser Arg Leu Met Glu Gln Lys Lys Phe Val Lys Gly Ala Leu Thr Lys
 145 150 155 160

Glu Ala Phe Lys Ser Tyr Val Pro Leu Ile Ala Glu Glu Val Tyr Lys
 165 170 175

Tyr Phe Arg Asp Ser Lys Asn Phe Arg Leu Asn Glu Arg Thr Thr Gly
 180 185 190

Thr Ile Asp Val Met Val Thr Gln Pro Glu Met Thr Ile Phe Thr Ala
 195 200 205

Ser Arg Ser Leu Leu Gly Lys Glu Met Arg Ala Lys Leu Asp Thr Asp
 210 215 220

Phe Ala Tyr Leu Tyr Ser Asp Leu Asp Lys Gly Phe Thr Pro Ile Asn
 225 230 235 240

Phe Val Phe Pro Asn Leu Pro Leu Glu His Tyr Arg Lys Arg Asp His
 245 250 255

Ala Gln Lys Ala Ile Ser Gly Thr Tyr Met Ser Leu Ile Lys Glu Arg
 260 265 270

Arg Lys Asn Asn Asp Ile Gln Asp Arg Asp Leu Ile Asp Ser Leu Met

275	280	285
Lys Asn Ser Thr Tyr Lys Asp Gly Val Lys Met Thr Asp Gln Glu Ile		
290	295	300
Ala Asn Leu Leu Ile Gly Val Leu Met Gly Gly Gln His Thr Ser Ala		
305	310	315 320
Ala Thr Ser Ala Trp Ile Leu Leu His Leu Ala Glu Arg Pro Asp Val		
	325	330 335
Gln Gln Glu Leu Tyr Glu Glu Gln Met Arg Val Leu Asp Gly Gly Lys		
	340	345 350
Lys Glu Leu Thr Tyr Asp Leu Leu Gln Glu Met Pro Leu Leu Asn Gln		
	355	360 365
Thr Ile Lys Glu Thr Leu Arg Met His His Pro Leu His Ser Leu Phe		
	370	375 380
Arg Lys Val Met Lys Asp Met His Val Pro Asn Thr Ser Tyr Val Ile		
385	390	395 400
Pro Ala Gly Tyr His Val Leu Val Ser Pro Gly Tyr Thr His Leu Arg		
	405	410 415
Asp Glu Tyr Phe Pro Asn Ala His Gln Phe Asn Ile His Arg Trp Asn		
	420	425 430
Lys Asp Ser Ala Ser Ser Tyr Ser Val Gly Glu Glu Val Asp Tyr Gly		
	435	440 445
Phe Gly Ala Ile Ser Lys Gly Val Ser Ser Pro Tyr Leu Pro Phe Gly		
	450	455 460
Gly Gly Arg His Arg Cys Ile Gly Glu His Phe Ala Tyr Cys Gln Leu		
465	470	475 480
Gly Val Leu Met Ser Ile Phe Ile Arg Thr Leu Lys Trp His Tyr Pro		
	485	490 495
Glu Gly Lys Thr Val Pro Pro Pro Asp Phe Thr Ser Met Val Thr Leu		
	500	505 510

Pro Thr Gly Pro Ala Lys Ile Ile Trp Glu Lys Arg Asn Pro Glu Gln
515 520 525

Lys Ile
530

<210> 7
<211> 533
<212> PRT
<213> Candida glabrata

<400> 7

Met Ser Thr Glu Asn Thr Ser Leu Val Val Glu Leu Leu Glu Tyr Val
1 5 10 15

Lys Leu Gly Leu Ser Tyr Phe Gln Ala Leu Pro Leu Ala Gln Arg Val
20 25 30

Ser Ile Met Val Ala Leu Pro Phe Val Tyr Thr Ile Thr Trp Gln Leu
35 40 45

Leu Tyr Ser Leu Arg Lys Asp Arg Pro Pro Leu Val Phe Tyr Trp Ile
50 55 60

Pro Trp Val Gly Ser Ala Ile Pro Tyr Gly Thr Lys Pro Tyr Glu Phe
65 70 75 80

Phe Glu Asp Cys Gln Lys Lys Tyr Gly Asp Ile Phe Ser Phe Met Leu
85 90 95

Leu Gly Arg Ile Met Thr Val Tyr Leu Gly Pro Lys Gly His Glu Phe
100 105 110

Ile Phe Asn Ala Lys Leu Ala Asp Val Ser Ala Glu Ala Ala Tyr Ser
115 120 125

His Leu Thr Thr Pro Val Phe Gly Lys Gly Val Ile Tyr Asp Cys Pro
130 135 140

Asn His Arg Leu Met Glu Gln Lys Lys Phe Val Lys Gly Ala Leu Thr
145 150 155 160

Lys Glu Ala Phe Val Arg Tyr Val Pro Leu Ile Ala Glu Glu Ile Tyr
165 170 175

Lys Tyr Phe Arg Asn Ser Lys Asn Phe Lys Ile Asn Glu Asn Asn Ser
180 185 190

Gly Ile Val Asp Val Met Val Ser Gln Pro Glu Met Thr Ile Phe Thr
195 200 205

Ala Ser Arg Ser Leu Leu Gly Lys Glu Met Arg Asp Lys Leu Asp Thr
210 215 220

Asp Phe Ala Tyr Leu Tyr Ser Asp Leu Asp Lys Gly Phe Thr Pro Ile
225 230 235 240

Asn Phe Val Phe Pro Asn Leu Pro Leu Glu His Tyr Arg Lys Arg Asp
245 250 255

His Ala Gln Gln Ala Ile Ser Gly Thr Tyr Met Ser Leu Ile Lys Glu
260 265 270

Arg Arg Glu Lys Asn Asp Ile Gln Asn Arg Asp Leu Ile Asp Glu Leu
275 280 285

Met Lys Asn Ser Thr Tyr Lys Asp Gly Thr Lys Met Thr Asp Gln Glu
290 295 300

Ile Ala Asn Leu Leu Ile Gly Val Leu Met Gly Gly Gln His Thr Ser
305 310 315 320

Ala Ala Thr Ser Ala Trp Cys Leu Leu His Leu Ala Glu Arg Pro Asp
325 330 335

Val Gln Glu Glu Leu Tyr Gln Glu Gln Met Arg Val Leu Asn Asn Asp
340 345 350

Thr Lys Glu Leu Thr Tyr Asp Asp Leu Gln Asn Met Pro Leu Leu Asn
355 360 365

Gln Met Ile Lys Glu Thr Leu Arg Leu His His Pro Leu His Ser Leu
370 375 380

Phe Arg Lys Val Met Arg Asp Val Ala Ile Pro Asn Thr Ser Tyr Val

385 390 395 400
 Val Pro Arg Asp Tyr His Val Leu Val Ser Pro Gly Tyr Thr His Leu
 405 410 415
 Gln Glu Glu Phe Phe Pro Lys Pro Asn Glu Phe Asn Ile His Arg Trp
 420 425 430
 Asp Gly Asp Ala Ala Ser Ser Ser Ala Ala Gly Gly Asp Glu Val Asp
 435 440 445
 Tyr Gly Phe Gly Ala Ile Ser Lys Gly Val Ser Ser Pro Tyr Leu Pro
 450 455 460
 Phe Gly Gly Gly Arg His Arg Cys Ile Gly Glu Leu Phe Ala Tyr Cys
 465 470 475 480
 Gln Leu Gly Val Leu Met Ser Ile Phe Ile Arg Thr Met Lys Trp Arg
 485 490 495
 Tyr Pro Thr Glu Gly Glu Thr Val Pro Pro Ser Asp Phe Thr Ser Met
 500 505 510
 Val Thr Leu Pro Thr Ala Pro Ala Lys Ile Tyr Trp Glu Lys Arg His
 515 520 525
 Pro Glu Gln Lys Tyr
 530
 <210> 8
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 <212> PRT
 <213> Uncinula necator
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 Arg Tyr Gly Trp Ile Phe Met Val Thr Ser Ile Ala Phe Ser Ile Ile
 20 25 30
 Leu Leu Ala Val Gly Leu Asn Val Leu Ser Gln Leu Leu Phe Arg Arg
 35 40 45

Pro Tyr Glu Pro Pro Val Val Phe His Trp Phe Pro Ile Ile Gly Ser
 50 55 60

Thr Ile Ser Tyr Gly Ile Asp Pro Tyr Lys Phe Tyr Phe Asp Cys Arg
 65 70 75 80

Ala Lys Tyr Gly Asp Ile Phe Thr Phe Ile Leu Leu Gly Lys Lys Val
 85 90 95

Thr Val Tyr Leu Gly Leu Gln Gly Asn Asn Phe Ile Leu Asn Gly Lys
 100 105 110

Leu Lys Asp Val Asn Ala Glu Glu Ile Tyr Thr Asn Leu Thr Thr Pro
 115 120 125

Val Phe Gly Arg Asp Val Val Tyr Asp Cys Pro Asn Ser Lys Leu Met
 130 135 140

Glu Gln Lys Lys Phe Met Lys Thr Ala Leu Thr Ile Glu Ala Phe His
 145 150 155 160

Ser Tyr Val Thr Ile Ile Gln Asn Glu Val Glu Ala Tyr Ile Asn Asn
 165 170 175

Cys Val Ser Phe Gln Gly Glu Ser Gly Thr Val Asn Ile Ser Lys Val
 180 185 190

Met Ala Glu Ile Thr Ile Tyr Thr Ala Ser His Ala Leu Gln Gly Glu
 195 200 205

Glu Val Arg Glu Asn Phe Asp Ser Ser Phe Ala Ala Leu Tyr His Asp
 210 215 220

Leu Asp Met Gly Phe Thr Pro Ile Asn Phe Thr Phe Tyr Trp Ala Pro
 225 230 235 240

Leu Pro Trp Asn Arg Ala Arg Asp His Ala Gln Arg Thr Val Ala Arg
 245 250 255

Thr Tyr Met Asn Ile Ile Gln Ala Arg Arg Glu Glu Lys Arg Ser Gly
 260 265 270

Glu Asn Lys His Asp Ile Met Trp Glu Leu Met Arg Ser Thr Tyr Lys
 275 280 285

Asp Gly Thr Pro Val Pro Asp Arg Glu Ile Ala His Met Met Ile Ala
 290 295 300

Leu Leu Met Ala Gly Gln His Ser Ser Ser Ser Thr Ser Ser Trp Ile
 305 310 315 320

Met Leu Trp Leu Ala Ala Arg Pro Asp Ile Met Glu Glu Leu Tyr Glu
 325 330 335

Glu Gln Leu Arg Ile Phe Gly Ser Glu Lys Pro Phe Pro Pro Leu Gln
 340 345 350

Tyr Glu Asp Leu Ser Lys Leu Gln Leu His Gln Asn Val Leu Lys Glu
 355 360 365

Val Leu Arg Leu His Ala Pro Ile His Ser Ile Met Arg Lys Val Lys
 370 375 380

Asn Pro Met Ile Val Pro Gly Thr Lys Tyr Val Ile Pro Thr Ser His
 385 390 395 400

Val Leu Ile Ser Ser Pro Gly Cys Thr Ser Gln Asp Ala Thr Phe Phe
 405 410 415

Pro Asp Pro Leu Lys Trp Asp Pro His Arg Trp Asp Ile Gly Ser Gly
 420 425 430

Lys Val Leu Gly Asn Asp Ala Val Asp Glu Lys Tyr Asp Tyr Gly Tyr
 435 440 445

Gly Leu Thr Ser Thr Gly Ala Ser Ser Pro Tyr Leu Pro Phe Gly Ala
 450 455 460

Gly Arg His Arg Cys Ile Gly Glu Gln Phe Ala Thr Leu Gln Leu Val
 465 470 475 480

Thr Ile Met Ala Thr Met Val Arg Phe Phe Arg Phe Arg Asn Ile Asp
 485 490 495

Gly Lys Gln Gly Val Val Lys Thr Asp Tyr Ser Ser Leu Phe Ser Met

Phe Ile Glu Ala Tyr Glu Thr Phe Gly Ser Leu Ile Ile Tyr Thr Ala
180 185 190

Ser Arg Cys Leu Met Gly Lys Glu Ile Arg Ala Ser Leu Asp Gly Asn
195 200 205

Val Ala Lys Leu Tyr Tyr Asp Leu Asp Gln Gly Phe Lys Pro Ile Asn
210 215 220

Phe Ile Phe Pro Asn Leu Pro Leu Pro Ser Tyr Arg Arg Arg Asp Val
225 230 235 240

Ala Cys Lys Lys Met Ala Asp Leu Tyr Ser Ser Ile Ile Gln Arg Arg
245 250 255

Lys Asp Glu Lys Asp Asn Asn Asn Ala Asp Leu Leu Gln Ala Leu Met
260 265 270

Asp Ala Thr Tyr Lys Asp Gly Thr His Ile Pro Asp His His Ile Ala
275 280 285

Gly Met Met Ile Ala Val Leu Phe Gly Gly Gln His Thr Ser Ala Thr
290 295 300

Thr Ser Ala Trp Thr Ile Leu Glu Leu Ala Asn Arg Pro Asp Ile Ile
305 310 315 320

Lys Ala Leu Arg Glu Glu Gln Ile Glu Lys Leu Gly Ser Leu Lys Ala
325 330 335

Asp Leu Thr Phe Asp Asn Leu Lys Asp Leu Pro Leu Leu Glu Ala Ala
340 345 350

Ile Arg Glu Thr Leu Arg Leu His Pro Pro Ile Phe Gln Met Met Arg
355 360 365

Arg Val Val Ala Asp Lys Ile Val Tyr Glu Lys Asn Gly Met Glu Ile
370 375 380

Pro Lys Gly Asn Phe Ile Cys Ala Ala Pro Gly Val Thr Gln Val Asp
385 390 395 400

Pro Thr Tyr Phe Asn Glu Pro Thr Thr Tyr Asn Pro Tyr Arg Trp Ile
 405 410 415

Glu Lys Thr Asp Pro Val His Gln Leu Glu Gln Gly Asp Asp Ala Asn
 420 425 430

Ile Asp Tyr Gly Phe Gly Ala Val Gly Ile Ser Ser Lys Ser Pro Phe
 435 440 445

Leu Pro Phe Gly Ala Gly Arg His Arg Cys Ile Gly Glu Gln Phe Gly
 450 455 460

Tyr Leu Gln Leu Lys Thr Val Ile Ser Thr Phe Ile Arg Thr Phe Asp
 465 470 475 480

Phe Asp Leu Asp Gly Lys Ser Val Pro Lys Ser Asp Tyr Thr Ser Met
 485 490 495

Val Val Val Pro Glu His Thr Ala Lys Val Arg Tyr Thr Trp Arg Glu
 500 505 510

<210> 10
 <211> 451
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 10

Met Ser Ala Val Ala Leu Pro Arg Val Ser Gly Gly His Asp Glu His
 1 5 10 15

Gly His Leu Glu Glu Phe Arg Thr Asp Pro Ile Gly Leu Met Gln Arg
 20 25 30

Val Arg Asp Glu Cys Gly Asp Val Gly Thr Phe Gln Leu Ala Gly Lys
 35 40 45

Gln Val Val Leu Leu Ser Gly Ser His Ala Asn Glu Phe Phe Phe Arg
 50 55 60

Ala Gly Asp Asp Asp Leu Asp Gln Ala Lys Ala Tyr Pro Phe Met Thr
 65 70 75 80

Pro Ile Phe Gly Glu Gly Val Val Phe Asp Ala Ser Pro Glu Arg Arg
 85 90 95

Lys Glu Met Leu His Asn Ala Ala Leu Arg Gly Glu Gln Met Lys Gly
 100 105 110

His Ala Ala Thr Ile Glu Asp Gln Val Arg Arg Met Ile Ala Asp Trp
 115 120 125

Gly Glu Ala Gly Glu Ile Asp Leu Leu Asp Phe Phe Ala Glu Leu Thr
 130 135 140

Ile Tyr Thr Ser Ser Ala Cys Leu Ile Gly Lys Lys Phe Arg Asp Gln
 145 150 155 160

Leu Asp Gly Arg Phe Ala Lys Leu Tyr His Glu Leu Glu Arg Gly Thr
 165 170 175

Asp Pro Leu Ala Tyr Val Asp Pro Tyr Leu Pro Ile Glu Ser Phe Arg
 180 185 190

Arg Arg Asp Glu Ala Arg Asn Gly Leu Val Ala Leu Val Ala Asp Ile
 195 200 205

Met Asn Gly Arg Ile Ala Asn Pro Pro Thr Asp Lys Ser Asp Arg Asp
 210 215 220

Met Leu Asp Val Leu Ile Ala Val Lys Ala Glu Thr Gly Thr Pro Arg
 225 230 235 240

Phe Ser Ala Asp Glu Ile Thr Gly Met Phe Ile Ser Met Met Phe Ala
 245 250 255

Gly His His Thr Ser Ser Gly Thr Ala Ser Trp Thr Leu Ile Glu Leu
 260 265 270

Met Arg His Arg Asp Ala Tyr Ala Ala Val Ile Asp Glu Leu Asp Glu
 275 280 285

Leu Tyr Gly Asp Gly Arg Ser Val Ser Phe His Ala Leu Arg Gln Ile
 290 295 300

Pro Gln Leu Glu Asn Val Leu Lys Glu Thr Leu Arg Leu His Pro Pro
 305 310 315 320

Leu Ile Ile Leu Met Arg Val Ala Lys Gly Glu Phe Glu Val Gln Gly
 325 330 335

His Arg Ile His Glu Gly Asp Leu Val Ala Ala Ser Pro Ala Ile Ser
 340 345 350

Asn Arg Ile Pro Glu Asp Phe Pro Asp Pro His Asp Phe Val Pro Ala
 355 360 365

Arg Tyr Glu Gln Pro Arg Gln Glu Asp Leu Leu Asn Arg Trp Thr Trp
 370 375 380

Ile Pro Phe Gly Ala Gly Arg His Arg Cys Val Gly Ala Ala Phe Ala
 385 390 395 400

Ile Met Gln Ile Lys Ala Ile Phe Ser Val Leu Leu Arg Glu Tyr Glu
 405 410 415

Phe Glu Met Ala Gln Pro Pro Glu Ser Tyr Arg Asn Asp His Ser Lys
 420 425 430

Met Val Val Gln Leu Ala Gln Pro Ala Cys Val Arg Tyr Arg Arg Arg
 435 440 445

Thr Gly Val
 450

<210> 11
 <211> 503
 <212> PRT
 <213> Homo sapiens

<400> 11

Met Leu Leu Leu Gly Leu Leu Gln Ala Gly Gly Ser Val Leu Gly Gln
 1 5 10 15

Ala Met Glu Lys Val Thr Gly Gly Asn Leu Leu Ser Met Leu Leu Ile
 20 25 30

Ala Cys Ala Phe Thr Leu Ser Leu Val Tyr Leu Ile Arg Leu Ala Ala
 35 40 45

Gly His Leu Val Gln Leu Pro Ala Gly Val Lys Ser Pro Pro Tyr Ile

Thr Tyr Lys Asp Gly Arg Pro Leu Thr Asp Asp Glu Val Ala Gly Met
 290 295 300

Leu Ile Gly Leu Leu Leu Ala Gly Gln His Thr Ser Ser Thr Thr Ser
 305 310 315 320

Ala Trp Met Gly Phe Phe Leu Ala Arg Asp Lys Thr Leu Gln Lys Lys
 325 330 335

Cys Tyr Leu Glu Gln Lys Thr Val Cys Gly Glu Asn Leu Pro Pro Leu
 340 345 350

Thr Tyr Asp Gln Leu Lys Asp Leu Asn Leu Leu Asp Arg Cys Ile Lys
 355 360 365

Glu Thr Leu Arg Leu Arg Pro Pro Ile Met Ile Met Met Arg Met Ala
 370 375 380

Arg Thr Pro Gln Thr Val Ala Gly Tyr Thr Ile Pro Pro Gly His Gln
 385 390 395 400

Val Cys Val Ser Pro Thr Val Asn Gln Arg Leu Lys Asp Ser Trp Val
 405 410 415

Glu Arg Leu Asp Phe Asn Pro Asp Arg Tyr Leu Gln Asp Asn Pro Ala
 420 425 430

Ser Gly Glu Lys Phe Ala Tyr Val Pro Phe Gly Ala Gly Arg His Arg
 435 440 445

Cys Ile Gly Glu Asn Phe Ala Tyr Val Gln Ile Lys Thr Ile Trp Ser
 450 455 460

Thr Met Leu Arg Leu Tyr Glu Phe Asp Leu Ile Asp Gly Tyr Phe Pro
 465 470 475 480

Thr Val Asn Tyr Thr Thr Met Ile His Thr Pro Glu Asn Pro Val Ile
 485 490 495

Arg Tyr Lys Arg Arg Ser Lys
 500

<210> 12
 <211> 504
 <212> PRT
 <213> Artificial

 <220>
 <223> Arabidopsis thaliana fusion protein

 <400> 12

 Met His His His His His His Ser Ser Gly Leu Val Pro Arg Gly Ser
 1 5 10 15

 Gly Met Lys Glu Thr Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp
 20 25 30

 Ser Pro Asp Leu Gly Thr Asp Asp Asp Asp Lys Ala Met Ala Asp Ile
 35 40 45

 Gly Ser Lys Lys Lys Arg Leu Pro Pro Thr Leu Lys Ala Trp Pro Pro
 50 55 60

 Leu Val Gly Ser Leu Ile Lys Phe Leu Lys Gly Pro Ile Ile Met Leu
 65 70 75 80

 Arg Glu Glu Tyr Pro Lys Leu Gly Ser Val Phe Thr Val Asn Leu Val
 85 90 95

 His Lys Lys Ile Thr Phe Leu Ile Gly Pro Glu Val Ser Ala His Phe
 100 105 110

 Phe Lys Ala Ser Glu Ser Asp Leu Ser Gln Gln Glu Val Tyr Gln Phe
 115 120 125

 Asn Val Pro Thr Phe Gly Pro Gly Val Val Phe Asp Val Asp Tyr Ser
 130 135 140

 Val Arg Gln Glu Gln Phe Arg Phe Phe Thr Glu Ala Leu Arg Val Asn
 145 150 155 160

 Lys Leu Lys Gly Tyr Val Asp Met Met Val Thr Glu Ala Glu Asp Tyr
 165 170 175

 Phe Ser Lys Trp Gly Glu Ser Gly Glu Val Asp Ile Lys Val Glu Leu
 180 185 190

Glu Arg Leu Ile Ile Leu Thr Ala Ser Arg Cys Leu Leu Gly Arg Glu
195 200 205

Val Arg Asp Gln Leu Phe Asp Asp Val Ser Ala Leu Phe His Asp Leu
210 215 220

Asp Asn Gly Met Leu Pro Ile Ser Val Leu Phe Pro Tyr Leu Pro Ile
225 230 235 240

Pro Ala His Arg Arg Arg Asp Arg Ala Arg Glu Lys Leu Ser Glu Ile
245 250 255

Phe Ala Lys Ile Ile Gly Ser Arg Lys Arg Ser Gly Lys Thr Glu Asn
260 265 270

Asp Met Leu Gln Cys Phe Ile Glu Ser Lys Tyr Lys Asp Gly Arg Gln
275 280 285

Thr Thr Glu Ser Glu Val Thr Gly Leu Leu Ile Ala Ala Leu Phe Ala
290 295 300

Gly Gln His Thr Ser Ser Ile Thr Ser Thr Trp Thr Gly Ala Tyr Leu
305 310 315 320

Met Arg Tyr Lys Glu Tyr Phe Ser Ala Ala Leu Asp Glu Gln Lys Asn
325 330 335

Leu Ile Ala Lys His Gly Asp Lys Ile Asp His Asp Ile Leu Ser Glu
340 345 350

Met Asp Val Leu Tyr Arg Cys Ile Lys Glu Ala Leu Arg Leu His Pro
355 360 365

Pro Leu Ile Met Leu Met Arg Ala Ser His Ser Asp Phe Ser Val Thr
370 375 380

Ala Arg Asp Gly Lys Thr Tyr Asp Ile Pro Lys Gly His Ile Val Ala
385 390 395 400

Thr Ser Pro Ala Phe Ala Asn Arg Leu Pro His Ile Phe Lys Asp Pro
405 410 415

Asp Thr Tyr Asp Pro Glu Arg Phe Ser Pro Gly Arg Glu Glu Asp Lys
 420 425 430

Ala Ala Gly Ala Phe Ser Tyr Ile Ala Phe Gly Gly Gly Arg His Gly
 435 440 445

Cys Leu Gly Glu Pro Phe Ala Tyr Leu Gln Ile Lys Ala Ile Trp Ser
 450 455 460

His Leu Leu Arg Asn Phe Glu Leu Glu Leu Val Ser Pro Phe Pro Glu
 465 470 475 480

Ile Asp Trp Asn Ala Met Val Val Gly Val Lys Gly Asn Val Met Val
 485 490 495

Arg Tyr Lys Arg Arg Gln Leu Ser
 500

<210> 13
 <211> 21
 <212> DNA
 <213> artificial

<220>
 <223> RT-PCR primer

<400> 13
 ttaagaaagc tggcgctct t

21

<210> 14
 <211> 30
 <212> DNA
 <213> Artificial

<220>
 <223> PCR primer

<400> 14
 ccgggatcca agaagaagcg tcttctctct

30

<210> 15
 <211> 30
 <212> DNA
 <213> Artificial

<220>
 <223> PCR primer

<400> 15
ccgctcgagt taagaaagct ggcgcctctt

30